

PRESSURE MEASURING TESTS

SERIES: B-BARCLAY

Brown and Williamson Tobacco Co.  
1600 W. Hill St.  
Louisville, Ky. 40201

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### Lip-Pressure Measuring Tests - Series B - Barclay

A second series of tests were conducted to measure the pressure exerted on a cigarette filter by human lips. The purpose of these tests (Series B) was to determine the pressure exerted on a Barclay filter, as opposed to the filter of a Rich Light which was tested in the first series (Series A).

In essence, the measurement method and test procedure were the same as in Series A, with the exceptions noted in Appendix A. A small water-filled bulb attached to the cigarette filter at the position of lip contact experiences a rise in internal pressure when exposed to the pressure acting externally to the bulb. This pressure rise is measured by a low compliance pressure transducer and displayed on an oscilloscope.

The relationship between pressure applied to the bulb by a smoker's lips and the magnitude of the oscilloscope-trace deflection is calibrated using a device which simulates the action of human lips. The device employs a thin-walled latex tube which applies a variable (but measurable) level of pressure to the cigarette filter by means of inflation of the tube with air pressure. When the cigarette is being smoked we convert the oscilloscope reading to pressure, using this calibration relationship, to obtain a measure of lip-pressure.

The smokers were selected from a group of individuals who had previously served as panelists at the test facility operated by Brown & Williamson. Each was asked to smoke normally using a fresh Barclay

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cigarette instrumented as described above. The oscilloscope trace deflection produced with each puff was recorded by my colleague, Mark Johnson, seated in the same room as the smoker, and later converted to pressure using the calibration relationship. Typically ten puffs were recorded; five with the bulb positioned against the upper-lip, five with the bulb against the lower-lip. Whether the upper- or lower-lip was tested first was selected randomly during the two days of testing.

The test results were analysed in the same fashion as before yielding values for each smoker for: pressure exerted during lighting,  $p_L$ ; average upper-lip pressure,  $p_u$ ; and average lower-lip pressure,  $p_b$ . Overall averages (and standard deviation) were computed from the entire group of 17 subjects and an overall mean lip-pressure,  $\bar{p}$  was determined. The results are given in Table 1. All test data sheets are included in Appendix B.

It should be pointed out that in these tests, as in Series A, we encountered some problem in positioning the bulb so that it made good contact with the smoker's lips. At times during the test, it was apparent that the bulb was not against the lip. All such readings were disregarded. At other times, a low reading was observed, probably as a result of the bulb being near the inner or outer edge of the lip contact area. Since there was no consistent means of discriminating between these low measurements and those which were closer to the maximum lip-pressure, they were necessarily included in the analysis. The results therefore reflect an average of the pressure distribution along the lips, not a maximum.

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Judging from the distribution of readings obtained, however, it is clear that the maximum lip-pressure for any given individual is not more than about twice as large as the average values given in Table 1.

These results compare favorably with the measurements made during the first test series using Rich Lights:

<u>Series A</u>	<u>Series B</u>
$p_L = 55.0$ torr	25.1
$p_u = 43.7$	45.1
$p_b = 24.7$	28.8
$\bar{p} = 34.2$	35.2

Clearly there are no significant differences between the pressures exerted on the Rich Light and Barclay filters and therefore, all conclusions drawn from Series A still apply. Most importantly, the pressures exerted by human lips on the Barclay filter are most closely approximated by the Cambridge holder, currently used in the FTC test procedure. The filtrona holder, by contrast, exerts pressures which are about 15 times greater than normal lip-pressure.

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Table 1. Data Summary

Lip-pressures (in torr)

<u>Subject</u>	<u>Upper-lip (<math>p_u</math>)</u>	<u>Bottom-lip (<math>p_b</math>)</u>	<u>Overall (<math>\bar{p}</math>)</u>	<u>Lighting (<math>p_L</math>)</u>
1	7.9	18.8	14.0	(a)
2		(calibration error)		
3	7.0	6.7	6.8	(a)
4	59.5	4.8	32.1	6.4 (b)
5	4.4	3.5	4.0	2.54 (b)
6	27.5	2.1	14.8	(a)
7	124	144	133	135 (c)
8	10.7	37.5	22.6	(a)
9	9.5	2.6	5.7	1.0 (b)
10	14.9	6.7	9.7	4.1 (b)
11	51.8	1.5	26.6	(a)
12		(bulb rupture)		
13		(bulb rupture)		
14	54.0	22.4	35.1	20.3 (b)
15	63.5	115	82.9	57.1 (c)
16	57.5	31.5	44.6	(a)
17	138	31.6	80.5	7.6 (b)
18	97.4	27.9	54.0	5.1 (b)
19	7.0	6.8	6.9	12.7 (c)
Average $\pm$ s.d.		45.8 $\pm$ 43.1	29.0 $\pm$ 41.4	35.8 $\pm$ 36.1
				25.1 $\pm$ 41.9

- (a) Bulb not against lip
- (b) Lighting with bulb against bottom-lip
- (c) Lighting with bulb against upper-lip

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Appendix A  
**Modifications in the Apparatus and Test Procedure**

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In the Series A tests, mounting the delicate sensing bulb onto the filter was found to be extremely time-consuming. Furthermore, mounting the bulb to the cigarette was a difficult task requiring a steady hand and no doubt contributed to some slight inconsistencies from one cigarette to the next.

To eliminate these problems in Series B the bulb was instead mounted on a 5/16" I.D. latex sleeve which could be easily mounted and, more importantly, re-used for several tests. It was also hoped that using the same sleeve would eliminate the need for separate calibrations on each cigarette. This proved not to be true, however, probably due to the influence on sensitivity of very slight differences in the placement of the latex sleeve on the filter.

In using the sleeve, we felt that there was no compelling reason to remove a portion of the filter paper as had been done in Series A prior to attaching the bulb. Since the filter paper represents a more rigid backing than the fibrous filter and yields less when load is applied, not removing the paper would tend to produce higher readings. In that the pressure levels in Series A and B are not significantly different, this appears to be a relatively minor effect.

We modified the test procedure in only one important respect. Due to the tendency of the channels in the Barclay filter to collapse and remain collapsed when subjected to the high calibration pressure, the calibration was conducted at the end of each test in Series B rather than at the beginning as in Series A. It was reasoned that, if the Barclay filter was altered in

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a systematic fashion prior to smoking, that this might lead to changes in the smoker's normal draw and, hence, his or her normal tip-pressure.

In all other respects, the test apparatus and procedure were the same as described in the Series A Final Report.

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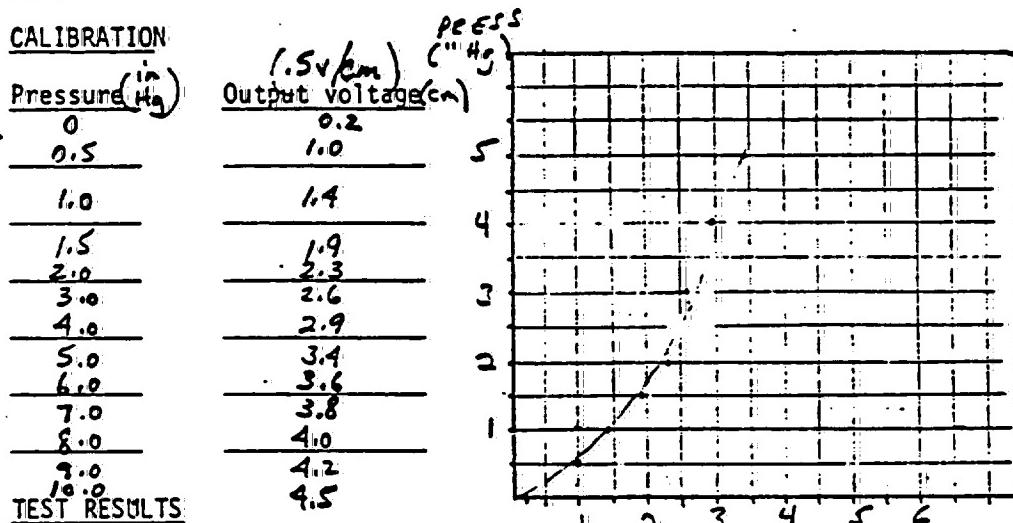
Appendix B  
**Test Results**

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Test Data Sheet

Date 8/31 Time 9:30 Subject # 1 Sex F  
 Weight \_\_\_\_\_ Height \_\_\_\_\_

Comments \_\_\_\_\_



Measurement #	LIGHTING	Maximum scale reading	Photograph
1	1	.4	0
2	2	1.2	0.45
3	3	0.9	0.20
4	4	1.0	0.25
5	5	1.1	0.35
6	6	1.6	0.7
7	7	1.8	1.0
8	8	1.1	0.35
9	9	1.9	1.1
10	10	1.4	0.55

2.15 ± 4.6

Test comments:

CIGARETTE TO FAR INTO MOUTH (SHE SAID)  
 ZERO WAS ABOUT 0.4 WHICH SHE HELD CIGARETTE

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Test Data Sheet

X  
no calibration

Date 8/31 Time 10:00 Subject # 2 Sex F

Weight \_\_\_\_\_ Height \_\_\_\_\_

Comments SHE REALLY SUCKED HARD IN  
THE BEGINNING (BOTH CHEEKS WENT IN)

CALIBRATION SAME AS #1

Pressure      Output voltage

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

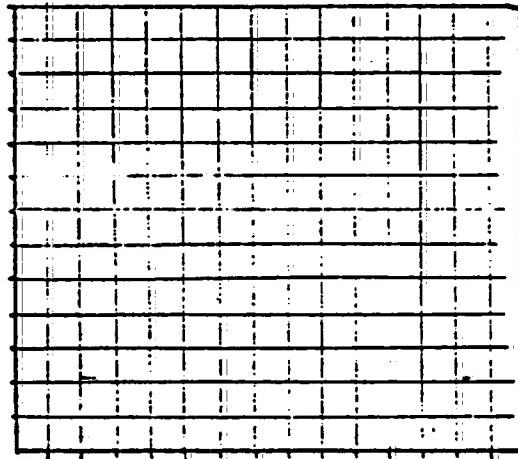
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



TEST RESULTS

Measurement #

Maximum scale reading

Photograph

LIGHTING UP	1	4.2	_____
	2	9.0	_____
	3	8.5	_____
	4	2.1	_____
POSITION	5	2.2	_____
	6	0.6	_____
	7	2.3	_____
	8	2.4	_____
	9		_____
	10		_____

Test comments:

BASELINE  
0.5

CALIBRATION WAS  
ASSUMED NOT TO  
HAVE CHANGED FROM  
#1; THIS MAY HAVE  
BEEN A BAD ASSUMPTION

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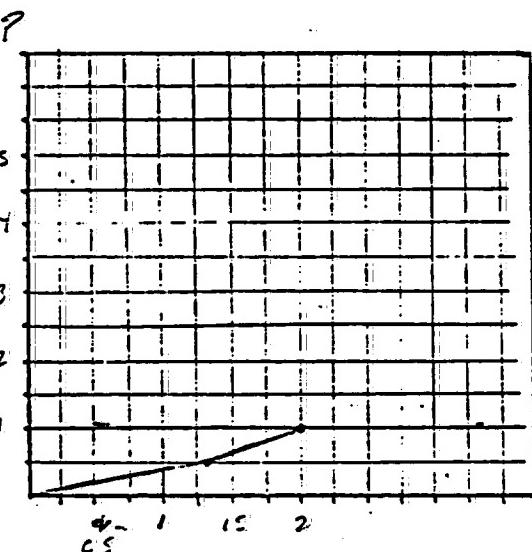
Test Data Sheet

Date 8/31 Time 10:30 (10:45) Subject # 3 Sex F  
 Weight        Height       

Comments \_\_\_\_\_

CALIBRATION

Pressure (in.)	(0.5v/cm)
0	0.0
0.5	1.3
1.0	2.6
1.5	2.8
2.0	3.3
3.0	4.3
4.0	4.9
5.0	5.4



TEST RESULTS

Measurement #

Maximum scale reading

Photograph

LIGHTING TOP	1	→	0.5	X	0.05
	2		0.8	0.25	0.15
	3		1.3	0.5	0.4
	4		1.3	0.5	0.4
	5		0.75	0.3	0.15
BOTTOM	6		1.0	0.4	0.25
	7		1.0	0.4	0.25
	8		0.8	0.35	0.2
	9		1.1	0.45	0.35
	10				

Test comments:

PACELIVE

0.4

PACELIVE

0.3

CALIBRATION DONE

WITH CIGARETTE  
AFTER TEST

2023100064

Test Data Sheet

Date 8/7 Time 11:15 Subject # 4 Sex F

Weight \_\_\_\_\_ Height \_\_\_\_\_

Comments \_\_\_\_\_

CALIBRATION

Pressure (in Hg)

0.0

0.5

1.0

1.5

2.0

3.0

4.0

5.0

6.0

7.0

TEST RESULTS  
8.0

(0.5V/cm)  
Output voltage  
Redo

(0.7) (0.1)

2.6 2.4

3.3 3.0

3.9 3.7

4.4 4.1

5.2 4.8

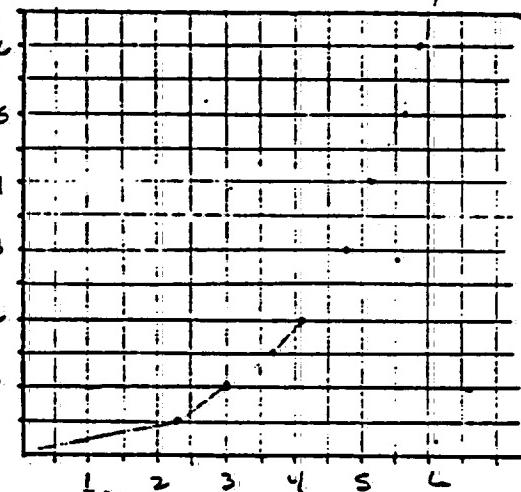
5.7 5.1

6.0 5.6

6.4 5.8

6.1

6.3



Measurement #

POSITION

1 LIGHTING

Maximum scale reading

Photograph

1	1.2	0.3	0.25
2	1.0	0.25	0.20
3	1.0	0.25	0.20
4	0.7	0.2	0.10
5	2.1	0.4	0.35
6	6.5	8.0	8.0
7	2.0	0.4	0.25
8	2.8	0.8	0.65
9			
10			

Test comments:

PASSEIVE  
AFT: 1 7:55  
C10: 65  
0.3

CALIBRATION 2025  
AFT: 1 7:55

2023100065

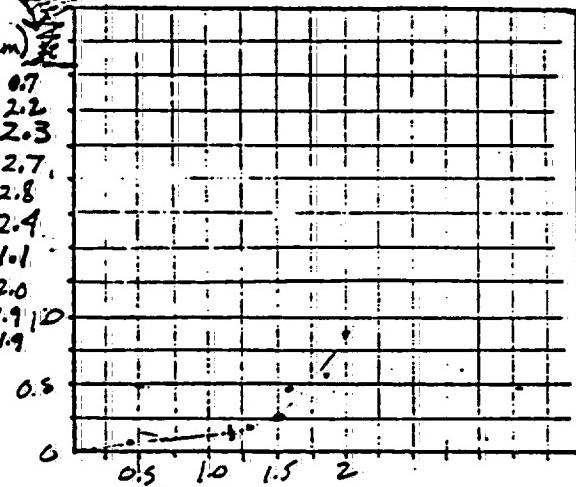
Test Data Sheet

Date 4 Time 12 Subject # 5 Sex M  
Weight \_\_\_\_\_ Height \_\_\_\_\_

Comments \_\_\_\_\_

CALIBRATION

Pressure (in Hg)	Output voltage (cm) (0.5v/cm)
0.0	0.0 (0)
0.5	1.4 (0.28)
1.0	1.8 (0.36)
1.5	2.1 (0.42)
2.0	2.3 (0.46)
2.5	2.4 (0.48)
3.0	2.5 (0.50)
3.5	2.6 (0.52)
4.0	2.7 (0.54)
4.5	2.8 (0.56)
5.0	2.9 (0.58)
5.5	3.0 (0.60)
6.0	3.1 (0.62)
6.5	3.2 (0.64)
7.0	3.3 (0.66)
7.5	3.4 (0.68)
8.0	3.5 (0.70)
8.5	3.6 (0.72)
9.0	3.7 (0.74)
9.5	3.8 (0.76)
10.0	3.9 (0.78)



TEST RESULTS

Measurement #	Maximum scale reading	Photograph
1 BOTTOM LIGHTING	0.7	0.10
2	1.0	0.15
3	0.9	0.15
4	1.0	0.15
5 TOP	1.5	0.25
6	1.1	0.15
7	1.0	0.15
8	1.0	0.15
9		
10		

Test comments:

BASELINE WHEN  
HOLDING CIGARETTE  
0.3

CALIBRATION DONE  
AFTER TEST  
(CIGARETTE FILTER WAS MASHED  
DOWN BY SMOKER)  
**2023100066**

Test Data Sheet

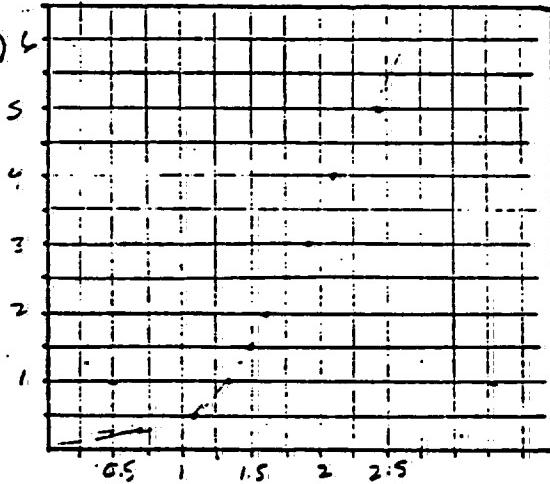
Date 8/31 Time 1:50 Subject # 6 Sex F

Weight \_\_\_\_\_ Height \_\_\_\_\_

Comments NEW PULB ; IT IS A  
LITTLE FLATTER

CALIBRATION

Pressure Hg	in 0.5v/cm	Output voltage(cm)
0.0		0.1
0.5		1.2
0.25		0.8
1.0		1.4
1.5		1.6
2.0		1.7
3.0		2.0
4.0		2.2
5.0		2.5
6.0		2.6



TEST RESULTS

	Measurement #	Maximum scale reading	Photograph
BOTTOM	1 LIGHTING	0.3	0
	2	0.4	0.05
	3	0.8	0.90 0.08
	4	1.0	0.12
	5	0.8	0.08
	6	0.8	0
	7	1.0	0.08
	8	2.2	1.25
	9	2.5	2.0
	10	2.0	1.0

Test comments:

BASELINE  
0.3

BASELINE  
0.6

BASELINE  
0.8

CALIBRATION

Done

AFTER TEST

2023100067

Test Data Sheet

Date 8/31 Time 2:30 Subject # 7 Sex M  
Weight / Height /

Comments \_\_\_\_\_

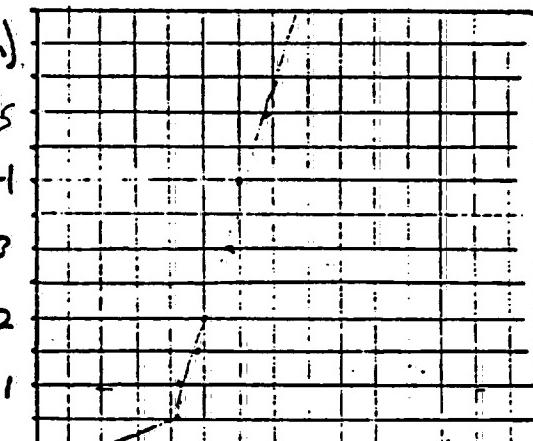
CALIBRATION

Pressure (in)  
Hg

0.0  
0.5  
1.0  
1.5  
2.0  
3.0  
4.0  
5.0  
6.0  
7.0

(0.5V/cm)  
Output voltage (cm)

0.9  
2.1  
2.2  
2.4  
2.5  
2.8  
3.0  
3.4  
3.7  
4.0



TEST RESULTS

Measurement #

TOP      LIGHTING

1  
2  
3  
4  
5  
6  
7  
8  
9  
10

Maximum scale reading

3.0  
2.5  
2.0  
2.2  
7.0  
3.5  
3.1  
3.1  
2.6  
3.3  
3.0

Photograph

5.3  
3.7  
2.0  
44.0  
5.3  
7.0  
6.025  
6.025  
4.1  
6.5  
5.3

BOTTOM

Test comments:

PASSENGER DURING  
SMOKING  
0.4

CALIBRATION DONE  
AFTER TEST

2023100068

Test Data Sheet

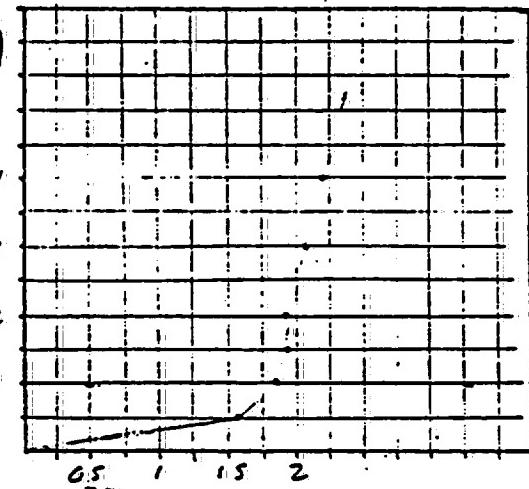
Date 8/21 Time 3:45 Subject # 8 Sex M

Weight \_\_\_\_\_ Height \_\_\_\_\_

Comments CIGARETTE SEEMED TO  
COMPRESS A LITTLE DURING CALIBRATION

CALIBRATION

Pressure (kg)	(0.50/cm)	Output voltage (cm)
0.0	1.7	0
0.5	3.3	1.6
1.0	3.5	1.8
1.5	3.6	1.9
2.0	3.6	1.9
3.0	3.8	2.1
4.0	3.9	2.2
5.0	4.0	2.3



TEST RESULTS

Measurement #

TOP 1  
2  
3  
4  
5  
BOTTOM 6  
7  
8  
9  
10

Maximum scale reading

2.2 1.3  
2.2 1.3  
1.9 1.0  
2.4 1.5  
2.4 1.5  
7.2 1.0  
4.2 2.0  
4.2 2.0  
4.2 1.9

Photograph

0.4  
0.4  
0.3  
0.5  
0.5  
0.3  
2.3  
2.3  
1.0

Test comments:

BASELINE BASELINE BASELINE  
0.9 2.2 2.4

CALIBRATE  
AFTER  
TEST

2023100069

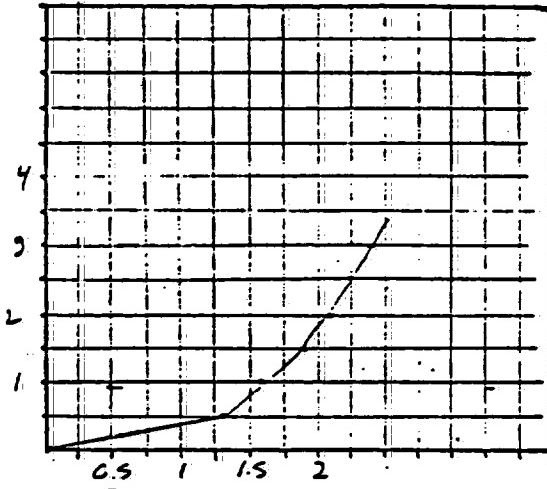
Test Data Sheet

Date 8/21 Time 5:00 Subject # 9 Sex M  
Weight \_\_\_\_\_ Height \_\_\_\_\_

Comments \_\_\_\_\_

CALIBRATION

Pressure	Output voltage	
0	.1	0
.5	1.4	1.3
1.0	1.7	1.6
1.5	2.0	1.9
2.0	2.2	2.1
2.5	2.5	2.4
4.0	2.7	2.6



TEST RESULTS

20 TROM

Measurement #	LIGHTING
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10

Maximum scale reading	Photograph
0.2	0.1
0.3	0.08
0.3	0.08
0.6	0.20
0.4	0.12
0.8	0.28
1.4	0.5
1.0	0.36
1.0	0.36

Test comments:

BASELINE DURING

TC ST

0.1

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### Test Data Sheet

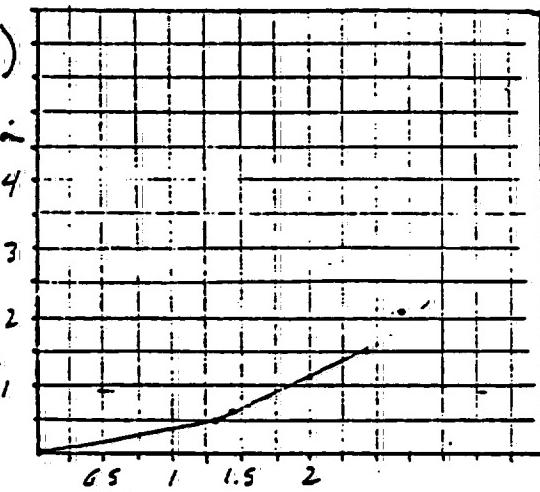
Date 9/1 Time 9:15 Subject # 10 Sex M

Weight \_\_\_\_\_ Height \_\_\_\_\_

Comments STILL USING SAME BULB  
FROM LAST NIGHT

#### CALIBRATION

Pressure (in Hg)	(0.5v/cm)	Output voltage (cm)
0.0	0.0	0.0 (0.1) After Calibration
0.5	1.3	
0.6	1.4	
1.1	2.0	
1.5	2.4	
2.1	2.7	
2.4	2.8	
2.8	2.9	
6.0	3.7	



#### TEST RESULTS

##### Measurement #

BOTTOM

1 LIGHTING

##### Maximum scale reading

##### Photograph

1	0.5	0.4	0.16
2	0.2	0.4	0.04
3	0.3	0.2	1.08
4	1.4	1.2	0.45
5	0.5	0.4	0.16
6	1.65	1.55	0.7
7	1.6	1.6	0.75
8	1.6	1.7	0.8
9	0.7	0.9	0.32
10	0.8	0.9	0.36

TOP

7

8

9

10

CALIBRATION

DONE

-FTC

TEST

Test comments:

BASELINE

0.1

BASELINE

0.0

BASELINE

-0.1

2023100071

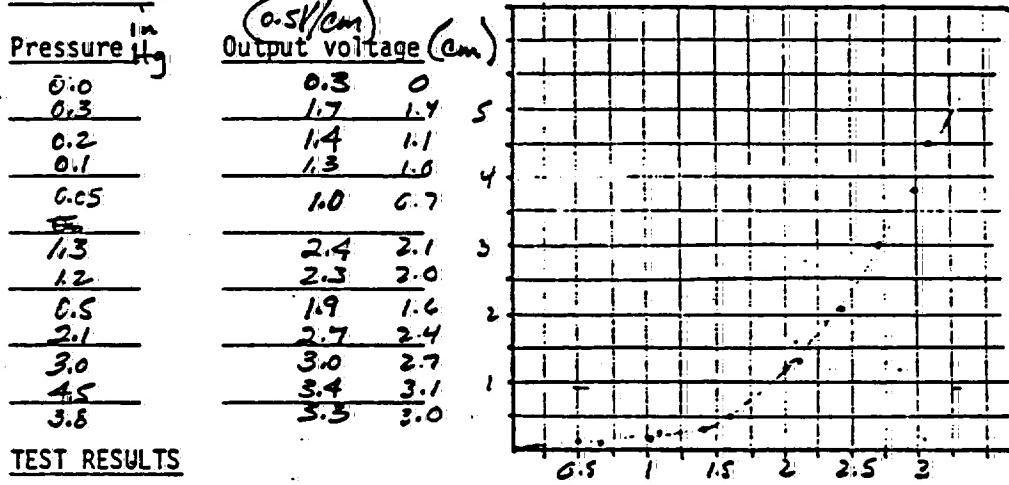
### Test Data Sheet

Date 9/1 Time 10:00 Subject # 11 Sex F

Weight \_\_\_\_\_ Height \_\_\_\_\_

Comments \_\_\_\_\_

#### CALIBRATION



#### TEST RESULTS

	Measurement #	Maximum scale reading	Photograph
TOP	1 LIGHTING →	0.2	0
	2	2.5	2.3
	3	2.0	1.8
	4	3.2	3.0
	5	2.4	2.2
BOTTOM	6	0.7	0.5
	7	1.7	0.9
	8	1.0	0.6
	9	0.8	0.4
	10		

#### CALIBRATION

DONE

Test comments:

AT 70°

IT IS

L'ARCLE 17000  
3.2 3.4

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Test Data Sheet

Date 9/1 Time 11:15 Subject # X Sex M ROGE

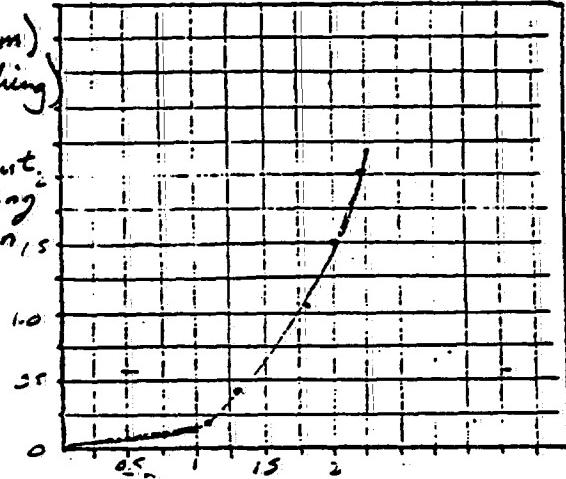
Asironi, decided not to include in data set because participant in previous test (WITH ROGE)

Weight \_\_\_\_\_ Height \_\_\_\_\_

Comments NEED TO FIND OUT SUBJECT #  
FROM FIRST TEST SET

CALIBRATION

Pressure (kg)	(0.5v/cm)	Output voltage (cm)
0.0	0	0.2 (0.4 touching)
0.4	1.3	1.5 ↑
0.2	1.1	1.3 without sucking
1.05	1.8	2.0 down, 1.5
1.5	2.0	2.2
2.0	2.2	2.4
2.6	2.4	2.6



Set

continuous drift

down - probably TEST RESULTS  
 Prior calibration  
 insert and take in back last. Measurement # points OK.

TOP

1 LIGHTING

2

3

4

5

BOTTOM

6

7

8

9

10

	Maximum scale reading		Photograph
1	2.1	2.1	1.7
2	1.8	1.8	1.05
3	0.9	0.9	0.75
4	1.2	1.2	0.30
5	1.7	1.7	0.95
6	0.5	0.3	0.1
7	0.5	0.3	0.1
8	0.5	0.3	0.1
9	0.4	0.1	0.05
10	0.5	0.2	0.05

CALIBRATION

DONE

TEST

TEST

Test comments:

PASSIVE  
0.2

PASSIVE  
0.0

2023100074

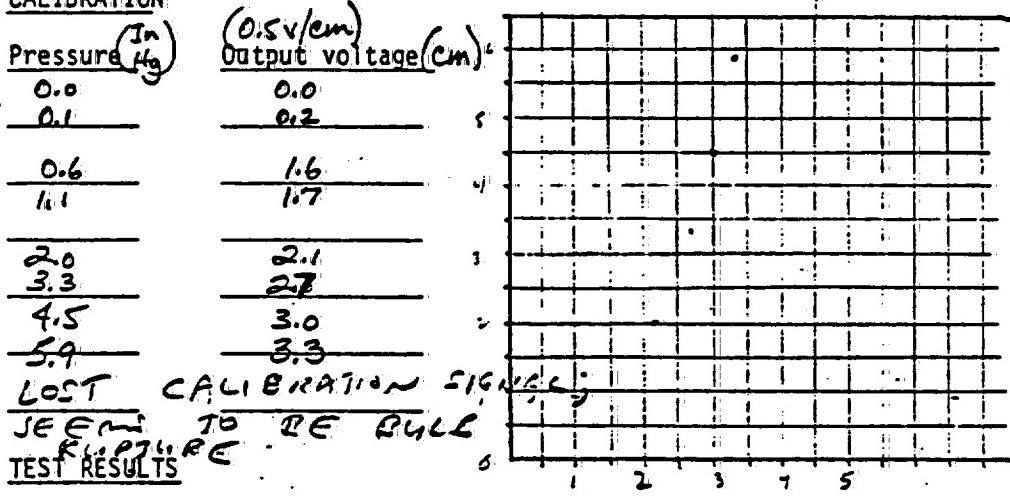
Test Data Sheet

Date 9/1 Time 11:45 Subject # 13 Sex F

Weight \_\_\_\_\_ Height \_\_\_\_\_

Comments SHE REALLY CLAMPS DOWN!  
Teeth definitely on bulb

CALIBRATION



Measurement #	Maximum scale reading	Photograph
1	4.5	
2	4.5	
3	4.0	
4	3.5	
5	3.5	
6	1.1	
7	4.0	
8	4.0	
9	1.0	
10		

CALIBRATION

DONE

AFTER

TEST

Test comments:

BASELINE  
0.0      BASELINE  
              0.3

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### Test Data Sheet

Date 9/1 Time 12:40 Subject # 14 Sex F

Weight \_\_\_\_\_ Height \_\_\_\_\_

Comments NEW BULB

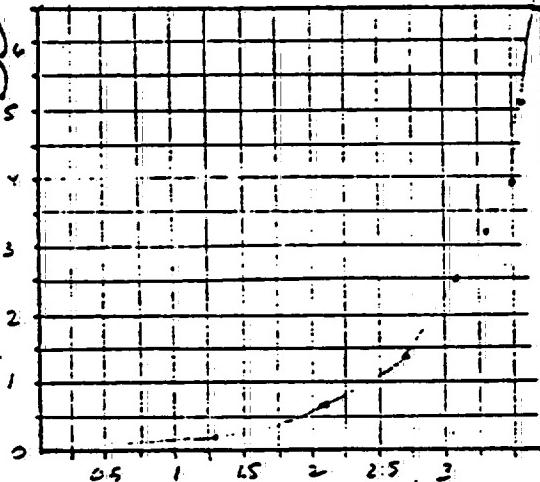
#### CALIBRATION

Pressure In  
kg

0.0  
0.2  
0.65  
1.4  
2.5  
3.2  
3.9  
5.1  
6.4

(0.5v/cm)  
Output voltage (cm)

0.0 (0.3 Touching)  
1.3  
2.1  
2.7 without  
suction  
3.1  
3.3  
3.5  
3.6  
3.8



#### TEST RESULTS

##### Measurement #

BOTTOM

1 LIGHTING

##### Maximum scale reading

##### Photograph

1	2.4	2.3	6808
2	2.1	2.0	5.6
3	2.5	2.4	1.0
4	2.5	2.4	1.0
5	2.6	2.5	1.1
6	2.9	2.8	1.6
7	3.2	3.1	2.5
8	2.7	2.6	1.2
9	3.4	3.3	3.2
10			

TOP

#### CALIBRATION

AT 10K

TEST

Test comments:

BASELINE  
0.1

BASELINE

2023100026

Test Data Sheet

Date 9/1 Time 1:30 Subject # 15 Sex M

Weight \_\_\_\_\_ Height \_\_\_\_\_

Comments \_\_\_\_\_

CALIBRATION

Pressure (in.)	(0.5V/cm)	Output voltage (cm/s)
0.0	0.0	(0.7)
0.5	1.8	
0.25	1.6	
1.2	2.4	without suction
1.75	2.7	suction
2.2	3.0	
3.2	3.2	
3.5	3.4	
4.4	3.5	
4.8	3.6	
5.3	3.6	
6.2	3.7	

TEST RESULTS

Measurement #	Maximum scale reading	Photograph
10.7	3.9	2.25
2	2.9	2.25
3	3.3	3.5
4	2.9	2.25
5	2.9	2.25
6	3.3	3.5
7	3.9	7.0
8	3.2	3.1
9		

CALIBRATION ~ 10

ITER

Test comments:

AP-25-102 10-25-102  
0-1

2023100027

Test Data Sheet

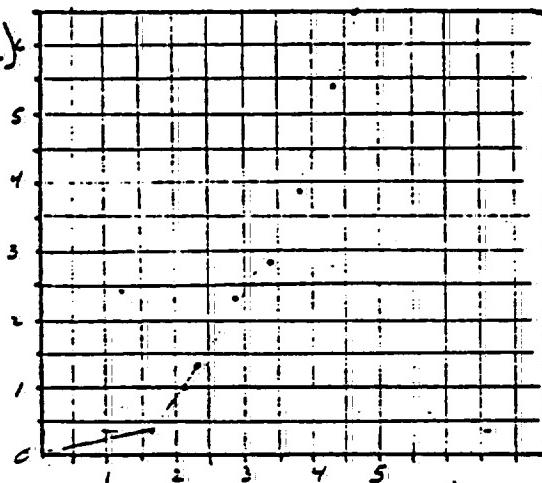
Date 9/1 Time 3:10 Subject # 17 Sex M

Weight \_\_\_\_\_ Height \_\_\_\_\_

Comments \_\_\_\_\_

CALIBRATION

Pressure (In Hg)	(0.5v/cm)	Output voltage (cm)
0.0	-0.1 (0.0)	0
1.0	2.0	3.1
0.3	1.5	1.6
1.3	2.2	2.3
2.3	2.8	2.9
2.8	3.3	3.4
3.9	3.7	3.8
5.4	4.2	4.2
6.5	4.6	4.7
7.5	4.8	4.9



TEST RESULTS

Measurement #

BOTTOM 1 LIGHTING

2  
3  
4  
5  
6  
7

TOP 8  
9

CALIBRATE 10

AFTER

TEST

Test comments:

BASELINE

0.0

Maximum scale reading

1.3
1.3
1.3
0.9
2.6
2.4
4.0
3.2
4.0
4.8
4.6
4.6
4.4

Photograph

0.3
0.3
0.3
0.2
1.7
1.4
4.5
2.7
4.5
7.0
6.4
6.4
5.5

2023100078

### Test Data Sheet

Date 9/1 Time 3:45 Subject # 18 Sex F

Weight \_\_\_\_\_ Height \_\_\_\_\_

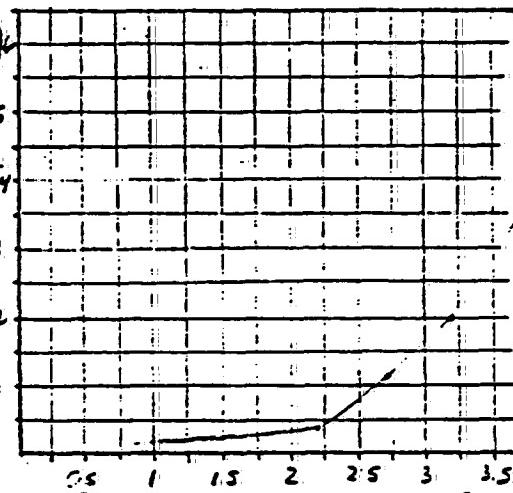
Comments \_\_\_\_\_

#### CALIBRATION

Pressure (In) Hg

0.0	(0.5v/cm)
0.4	0 0.8 (0.8)
1.1	2.2 2.3
2.0	2.7 2.8
3.3	3.2 3.3
4.2	3.7 3.8
4.6	4.0 4.1
5.6	4.1 4.4
6.4	4.5 4.6
7.9	4.7 4.8

Output voltage (cm)



#### TEST RESULTS

##### Measurement #

##### Maximum scale reading

##### Photograph

BOTTOM

1 LIGHTING

1.6 1.3

6.2

2

2.0 2.7

1.1

3

2.5 2.2

0.4

4

4.0 3.7

3.3

5

2.6 2.3

0.5

TOP

6

4.0 3.7

3.3

7

4.2 3.9

4.1

8

4.2 3.9

4.1

CALIBRATION

9

AFTER

10

Test comments:

PASSIVE

0.3

2023100079

Test Data Sheet

Date 1/1 Time 4:25 Subject # 19 Sex M

Weight \_\_\_\_\_ Height \_\_\_\_\_

Comments \_\_\_\_\_

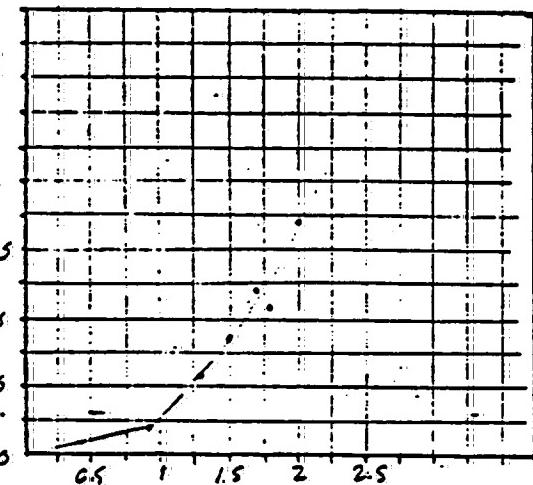
CALIBRATION

Pressure (in) (mm Hg)

0.0  
0.2  
0.6  
1.2  
1.8  
~~2.2~~  
~~2.9~~  
0.1  
0.85

(0.5v/cm)  
Output voltage (cm)

0.0  
0.9  
1.3  
1.7  
2.0  
2.6  
1.8  
1.5



TEST RESULTS

Measurement #

TOP

LICHTING

1

Maximum scale reading

1.4

1.2

0.5

2

0.8

0.6

0.25

3

0.6

0.4

0.2

4

0.5

0.3

0.18

5

0.8

0.6

0.25

COTTON

6

1.0

0.8

0.3

7

0.8

0.6

0.25

8

1.2

0.8

0.3

9

0.9

0.5

0.22

10

Photograph

CALIBRATE

AFTER

Test comments:

TEST

BASELINE      BASELINE  
0.2            0.4

2023100080

Test Data Sheet

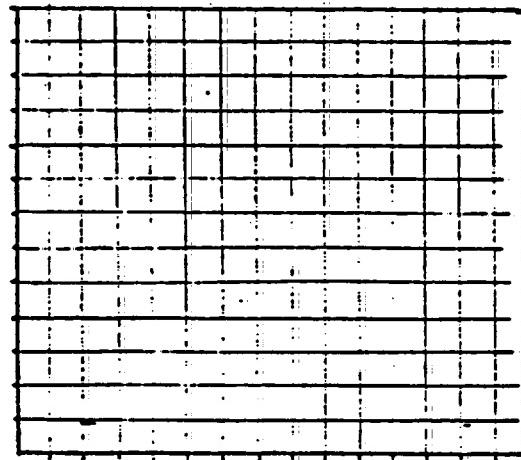
Date 9/1 Time 5:30 Subject # \_\_\_\_\_ Sex \_\_\_\_\_

Weight \_\_\_\_\_ Height \_\_\_\_\_

Comments SUCTION, THEN INSERT,  
THEN RELEASE SUCTION.

CALIBRATION

Pressure	Output voltage (0.8)
0	0.8
1.3	3.9
1.85	3.3
2.5	4.5
3.5	4.9



TEST RESULTS

Measurement #	Maximum scale reading	Photograph
1	5.1	
2	5.0	
3	4.7	
4	4.9	
5		
6		
7		
8		
9		
10		

Test comments:

WRONG TURNG! on  
FILTERONA H-LOCK

2023100081

Test Data Sheet

Date 9/1 Time 2:30 Subject # BORGWALOT Sex \_\_\_\_\_  
 Weight \_\_\_\_\_ Height \_\_\_\_\_

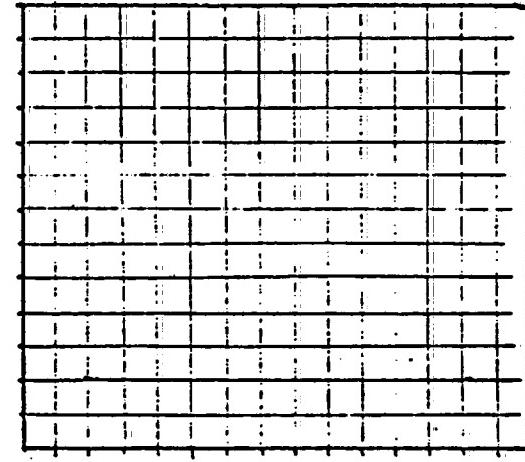
Comments INSECT ALL THE WAY THROUGH,  
THEN SLOWLY PULL BACK

CALIBRATION

In Pressure Hg	Output voltage
0.0	0.0 (0.3 inch)
0.3	0.9
0.2	0.7
0.75	1.0 without
1.1	1.1 suction
1.9	1.1
2.4	1.2
2.8	1.25
3.3	1.3
3.6	1.35
4.0	1.35
4.9	1.4

TEST RESULTS

Measurement #	Value
6.0	1.4
8.3	1.45
10.2	1.5 first
11.2	1.5 pass



Maximum scale reading

Photograph

1.3	USE
1.?	PEAK
1.2	OF
1.3	EACH
1.3	RUN
1.2	
1.3	
1.2	
1.3	
1.3	

CALIBRATE  
AFTER  
TEST

Test comments:

third  
 pass  
 (cigarette)  
 rotated

NOTE: VALUE  
 TO SYRINGE  
 WAS OPEN BUT  
 NOT TO ATMOSPHERE  
 THIS WAS CAUSE  
 OF LOWERED  
 PRESSURE!

2023100082

Test Data Sheet

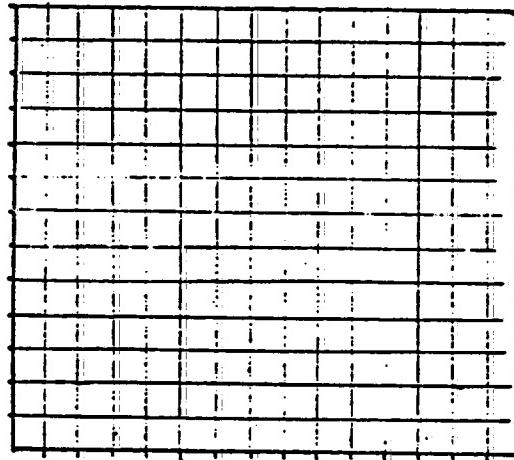
Date 8/21 Time 4:30 Subject # CAMB. # 1 Sex \_\_\_\_\_

Weight \_\_\_\_\_ Height \_\_\_\_\_

Comments BULB FLATTENED OUT DURING CALIBRATION

CALIBRATION

Pressure (in) Hg	(0.5v/cm) Output voltage (cm)
0.0	0.1
0.5	0.8
1.0	1.0
1.5	1.1
2.0	1.2
2.5	1.3
3.0	1.3
3.5	1.4
4.0	1.5
5.0	1.6
6.0	1.5
7.0	



TEST RESULTS

Measurement #

1 CAMEROGUE

- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

Maximum scale/reading

- 1.5
- 1.6
- 1.4
- 1.4
- 1.3
- 1.6
- 1.6
- 1.7
- 1.7

Photograph

CALIBRATE  
AFTER  
TEST

Test comments:

PUSHING CIGARETTE  
INTO HOLDER (TO GET  
READING)

2023100083

Test Data Sheet

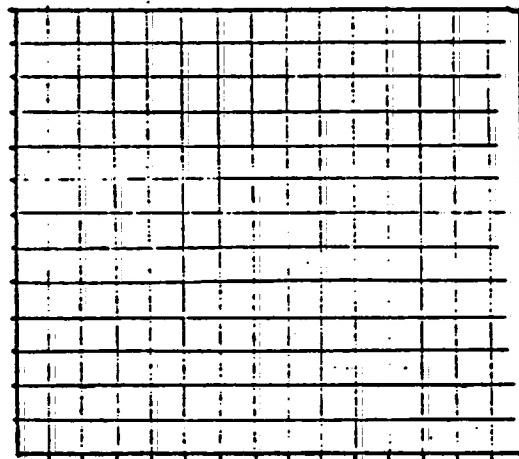
#2

Date 8/31 Time 5:30 Subject #CAMP Sex \_\_\_\_\_  
Weight FILTER 4.00 Height \_\_\_\_\_

Comments PUSHING CIGARETTE  
INTO HOLDER (TO GET READING)

CALIBRATION Scale: .34 cm

<u>Pressure</u>	<u>Output voltage</u>
0	.3
.5	1.4
1.0	1.6
1.5	1.9
2.0	2.0
2.25	2.3
4.1	2.5
5.2	2.6
6.5	2.8
8.1	3.1
10.1	3.3
11.3	3.4
12.1	3.5



TEST RESULTS

<u>Measurement #</u>	<u>Maximum scale reading</u>	<u>Photograph</u>
1	3.0	
2	2.2	
3	2.4	
4	2.3	
5	2.5	
6		
7		
8		
9		
10		

CALIBRATE  
ATTEC  
TEST

Test comments: CHANGED TO NEW  
BULB BEFORE THIS TEST

2023100084

Test Data Sheet

CALIBRATION

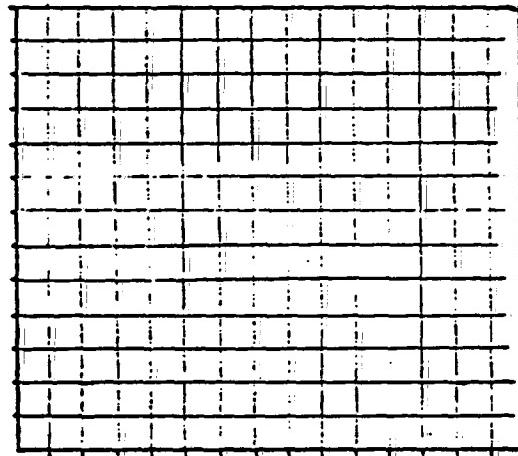
Date 8/31 Time 6:00 Subject # 3 Sex \_\_\_\_\_

Weight \_\_\_\_\_ Height \_\_\_\_\_

Comments \_\_\_\_\_

CALIBRATION

Pressure	Output voltage
0	.1
.4	.3
1.4	1.0
2.2	1.4
3.4	1.9
4.5	2.3
6.2	2.6
_____	_____
_____	_____



TEST RESULTS

Measurement #	Maximum scale reading	Photograph
1	2.2	_____
2	2.0	_____
3	2.0	_____
4	2.2	_____
5	_____	_____
6	_____	_____
7	_____	_____
8	_____	_____
9	_____	_____
10	_____	_____

CALIBRATE

OTERK  
TEST

Test comments: ALL THE WAY IN, BUT TAKE  
VALUE @ THE RING, NOT  
THE MAXIMUM WHICH OCCURS  
ALL THE WAY IN

2023100085

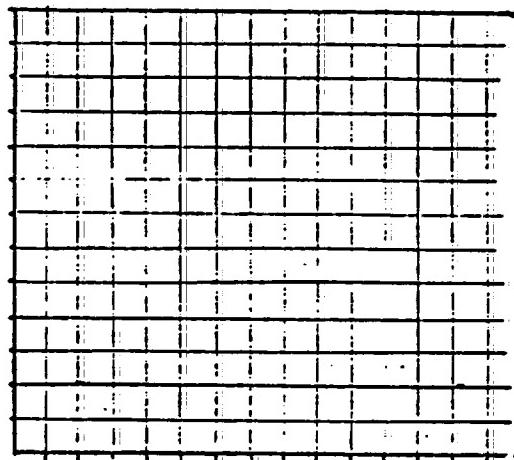
Test Data Sheet

Date \_\_\_\_\_ Time 6:30 Subject # FILTERONA Sex \_\_\_\_\_  
Weight \_\_\_\_\_ Height \_\_\_\_\_

Comments \_\_\_\_\_

CALIBRATION

<u>Pressure</u>	<u>Output voltage</u>
0	.2
1.1	1.6
6.9	2.1
4.1	2.7
5.9	3.0
9.3	3.4
10.6	3.5
17.1	3.6
15.0	3.7
19.0	3.8
21.2	3.9
24.6	4.0



TEST RESULTS

<u>Measurement #</u>	<u>Maximum scale reading</u>	<u>Photograph</u>
1	3.8	_____
2	3.9	_____
3	* 3.8	_____
4	_____	_____
5	_____	_____
6	_____	_____
7	_____	_____
8	_____	_____
9	_____	_____
10	_____	_____

CALICRATE  
AFTER  
TEST

Test comments:

\* LAST CONNECTION; RECONNECT  
(WITH WATER) BEFORE THIS  
READING.

2023100086